

No. 697,572.

Patented Apr. 15, 1902.

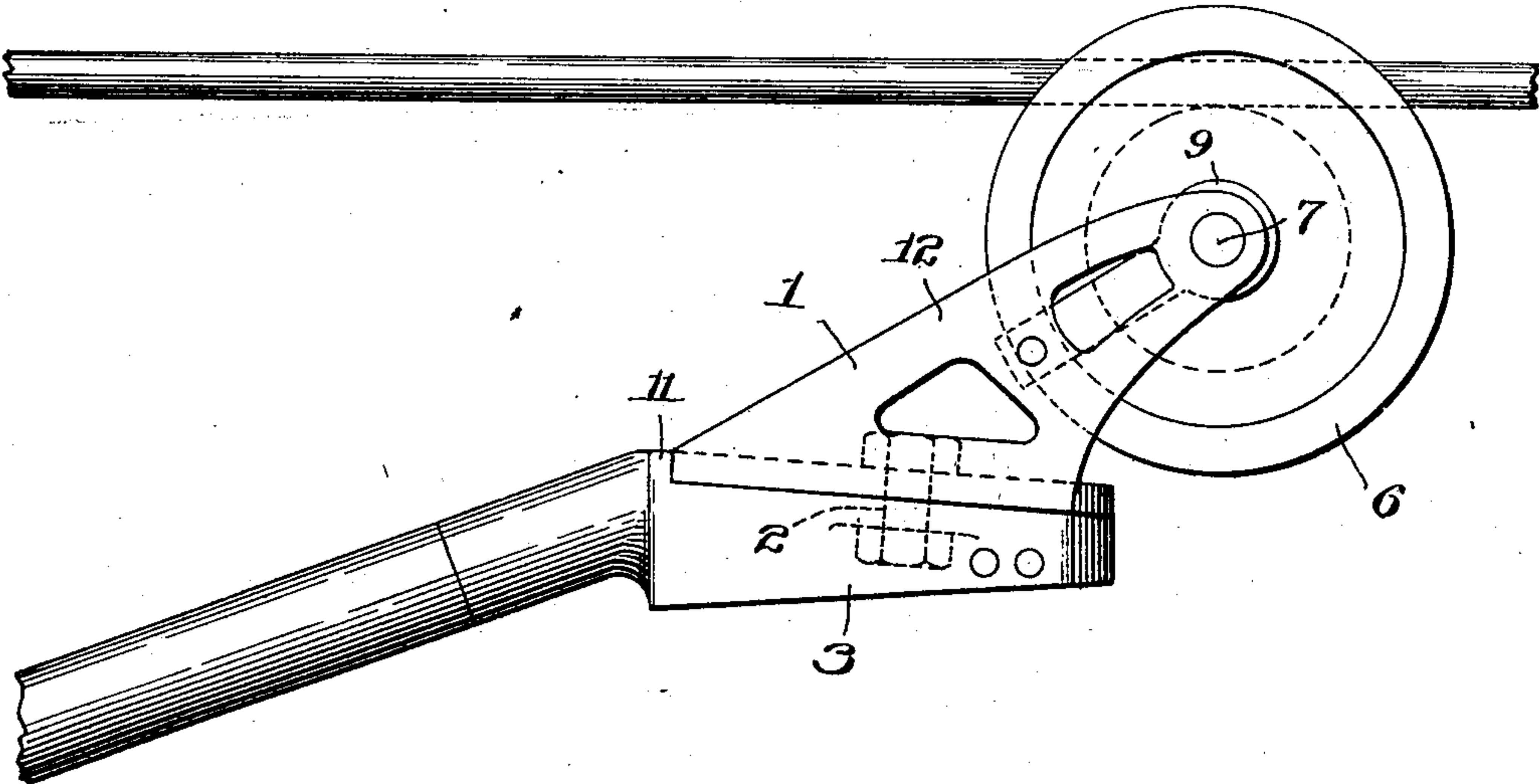
T. N. TURNER & G. R. MITCHELL.

TROLLEY HARP.

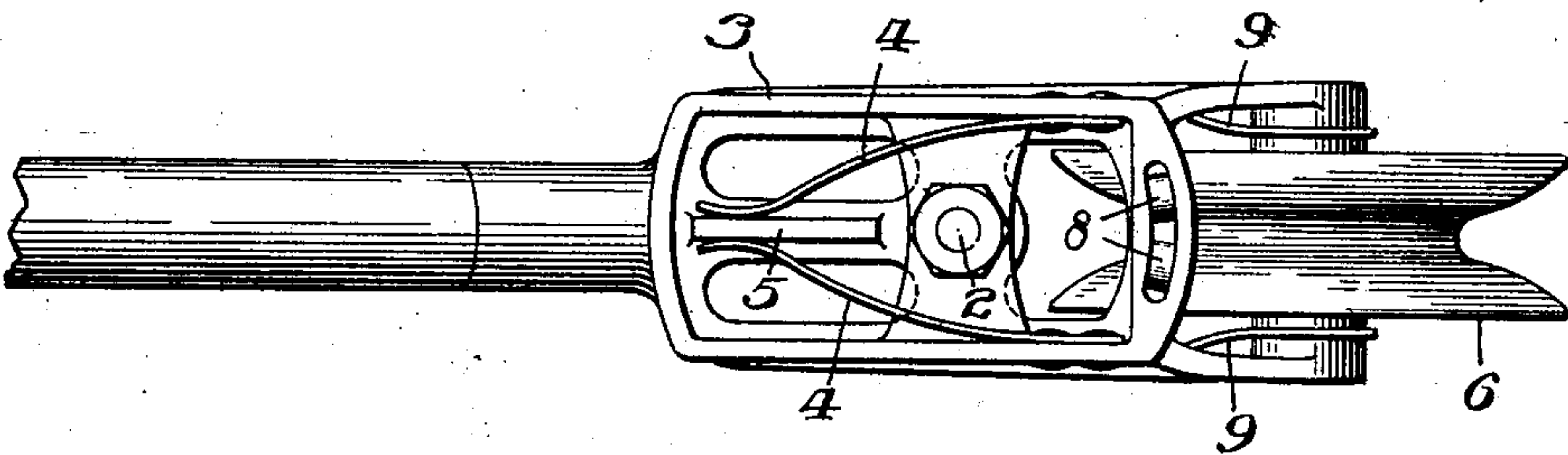
(Application filed Sept. 11, 1901.)

(No Model.)

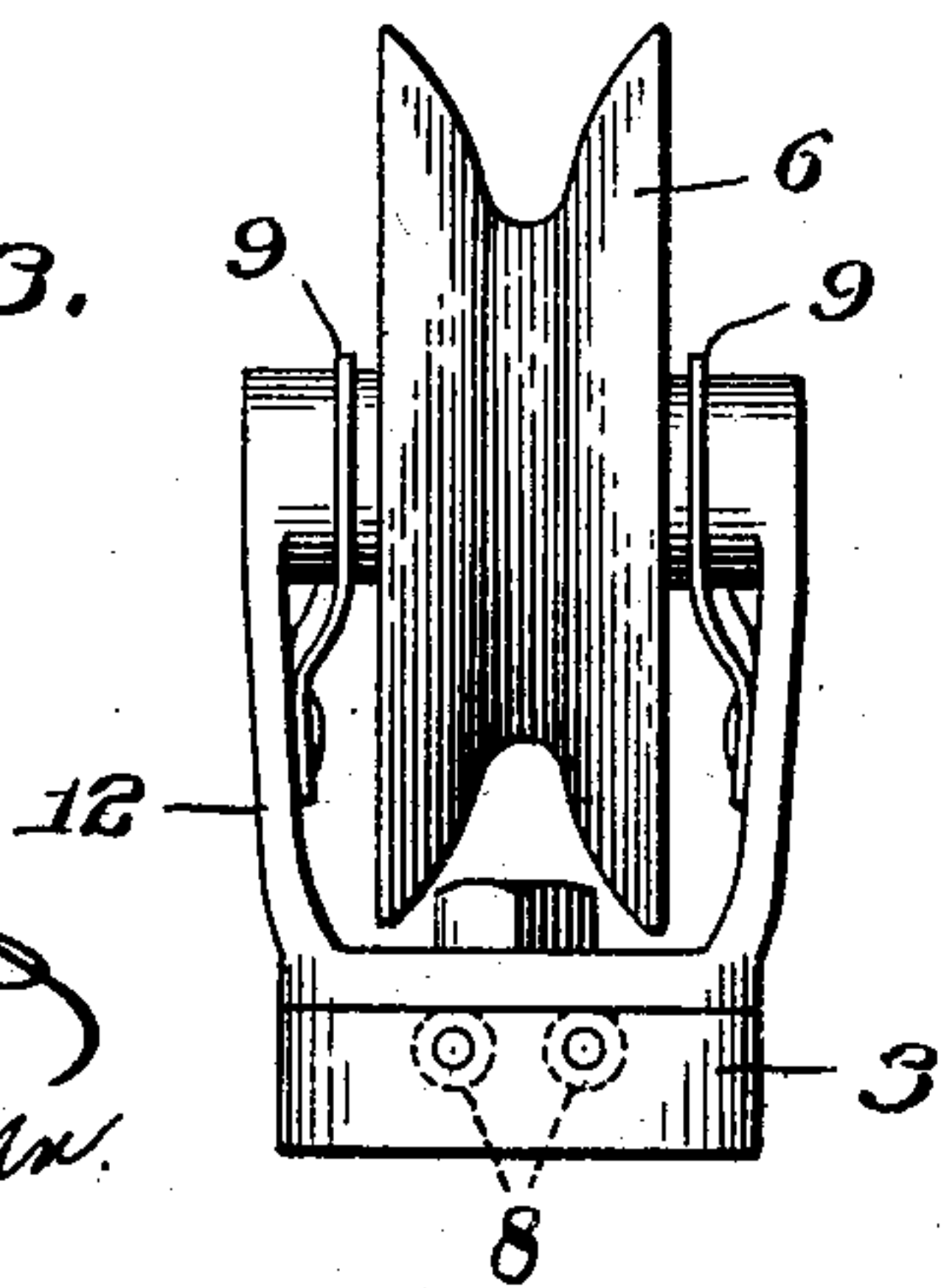
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES:

*A. V. Group*  
*Margaret Hoffman*

INVENTORS:

*Thomas N. Turner*  
*George R. Mitchell*  
BY *W. C. Crossdale*  
ATTORNEY



# UNITED STATES PATENT OFFICE.

THOMAS N. TURNER AND GEORGE R. MITCHELL, OF SPRINGFIELD, OHIO,  
ASSIGNORS OF THREE-FIFTHS TO J. E. COOPER, L. F. YOUNG, AND J. M.  
TODD, OF SPRINGFIELD, OHIO.

## TROLLEY-HARP.

SPECIFICATION forming part of Letters Patent No. 697,572, dated April 15, 1902.

Application filed September 11, 1901. Serial No. 75,001. (No model.)

*To all whom it may concern:*

Be it known that we, THOMAS N. TURNER and GEORGE R. MITCHELL, citizens of the United States, and residents of Springfield, in the county of Clark and State of Ohio, have invented a new and useful Trolley-Harp, of which the following is a specification.

Our invention relates to improvements in trolley-harps, our object being to provide improved means for supporting the trolley-wheel so that the same may have sufficient oscillation to take the direction of a switch, with means for normally returning the wheel to the direction of the car.

Referring to the drawings, Figure 1 is a side elevation of my device, showing the end of the pole and a portion of the feed-wire. Fig. 2 is a bottom view, and Fig. 3 is a rear end view.

Similar numerals refer to similar parts throughout the several views.

The wheel-frame 1 is pivoted at 2 to the bracket 3, which is adapted to be fixed rigid with the trolley-pole, said bracket 3 having a recessed upper part, leaving a shoulder 11, with an arc-shaped margin adapted to correspond with the rear arc-shaped margin of the wheel-frame. The shaft 7 of the wheel is mounted upon the arms 12 of frame 1 to the rear of the pivot 2. The springs 9, secured to the sides of frame 1 and having their free ends surrounding the shaft and resting against the sides of the wheel-hub, serve as conductors from the wheel to the frame. The bracket 3, which lies beneath the wheel-frame, is cored out or open (see Fig. 2) to make it light and to permit the free circulation of air through the working parts. Through the open part of the bracket projects the lug 5 of the wheel-frame 1. Against this lug 5 two springs 4, secured to the fixed bracket, are adapted to press to maintain the normal position of the wheel-frame. The antifriction-wheels 8 are also secured to the fixed bracket at its rear extremity and are adapted to carry the weight of the wheel-frame, especially when it is being pressed against the wire, so that the frame may readily ride upon them. It will be noted that these antifriction-wheels are placed at the extreme rear of the fixed

bracket and lie substantially beneath the shaft, carrying the wheel 6, where the greatest pressure is likely to be exerted between the frame 1 and bracket 3. This permits the easy movement of the bracket in response to any unevenness or deviation of the feed-wire, and also enables it to respond readily to the pressure of the springs 4.

The arrangement of our device is especially adapted to the taking of the proper overhead feed-wire switch. In the systems now in use there is a space of from four to six inches in the overhead switch in which the trolley-wheel is allowed to run on its rims or outer periphery. This allows the wheel to select the wire which is parallel with the direction of the car. If the harp of this nature had nothing to return it to its straight position as soon as it was free to move in case the car was going off at an angle to its former direction, the wheel would simply continue in a straight line in its original direction instead of adopting the new angle. The springs, however, tend to keep the trolley in alinement with the car's direction, while the fact that the frame upon which it is mounted has its pivot center in advance of the trolley-wheel axis serves to permit the wheel to respond quickly to any lateral unevenness in the wire. The arrangement of the springs or brushes 9 is such that in case the trolley-wheel should wear loose and wobble its outer edge or periphery would not strike the springs and wear them, as is now sometimes the case. The trolley-frame is cored out as much as possible to permit free circulation of air in and around the working parts, so that rust accumulation may be prevented and also undue heat of the parts.

What we claim is—

1. In a trolley-harp the combination of a fixed bracket, a movable wheel-frame pivoted thereto a wheel mounted in said frame to the rear of the pivot, and the antifriction-wheels 8, operating between the pivot-frame and the fixed bracket at the point of engagement between the frame and bracket which is nearest to the axis of the trolley-wheel.

2. The combination of a fixed bracket adapted to be secured to the trolley-pole, a trolley-wheel frame pivotally secured to the bracket



forward the axis of the trolley-wheel and antifriction means interposed between the bracket and the movable wheel-frame approximate the point of greatest pressure when  
5 the device is in normal position, substantially as described.

3. In combination with a cored-out bracket fixed to a trolley-pole, a movable wheel-frame pivoted to the bracket forward the axis of the  
10 trolley-wheel, a lug on the under side of the movable frame projecting into the cored-out part of the bracket and spring means operating between the lug and the fixed bracket for maintaining the normal position of the  
15 wheel-frame with respect to the bracket.

4. In combination with a cored-out bracket fixed to a trolley-pole, a movable wheel-frame pivoted to the bracket forward the axis of the  
20 trolley-wheel, a lug on the under side of the movable frame projecting into the cored-out part of the bracket and spring means operating between the lug and the fixed bracket for maintaining the normal position of the wheel-frame with respect to the bracket with anti-

friction-wheels operating between the rear of 25 the bracket and the wheel-frame.

5. The combination of a trolley-pole, a bracket recessed at its upper rear extension leaving a shoulder with an arc-shaped edge, a wheel-frame having an arc-shaped front  
30 edge conforming to the arc-shaped edge of the shoulder and pivotally secured to the bracket at a point concentric to its arc-shaped edge.

6. The combination of a trolley-bracket having a cored-out rear horizontal extension, a  
35 wheel-frame pivotally secured thereto having a lug upon its under side extending into and movable in the cored-out part of the bracket with springs secured to the fixed bracket and  
40 adapted to cooperate with the lug for maintaining the normal position of the wheel-frame, substantially as described.

THOMAS N. TURNER.  
G. R. MITCHELL.

Witnesses:

L. F. YOUNG,  
D. F. REINOEHL.